

**REMARKS**

This Amendment is in response to the Office Action dated March 19, 2003. Claims 1-87 are pending. Claims 1-87 are rejected. Claims 28-30, 56-58, 81-83, 85-87 are objected to. Claims 1-3, 28-35, 56-61, and 82-83 have been amended. Claims 84-87 have been canceled. Claims 88-90 have been added. Accordingly, claims 1-90 remain pending in the present application.

*Amendment of Figure 4*

The Examiner states that Figure 4 should be designated by a legend such as –Prior Art— because only that which is old is illustrated. Accordingly, Applicant submits an amended Figure 4 to include the requested caption.

*Objection of Claims 28-30, 56-58, 81-83 and 85-87*

Claims 28-30, 56-58, 81-83 and 85-87 are objected to because of informalities. Claims 85-87 have been canceled. Their objection is thus moot. Concerning claims 28-30, 56-58, and 81-83, Applicant has amended these claims to recite a standard “as of July 27, 2001”, the filing date of the present application. Applicant submits that with these amendments, the Examiner’s objection is traversed.

*Rejection of Claims 1-87 under 35 USC 102(b)*

Claims 1-87 are rejected under 35 USC 102(b) as being anticipated by Oono, et al. (5,223,970) (hereinafter “Oono”). Claims 84-87 have been canceled. Their rejection is thus moot. Concerning the remaining claims, the Examiner states:

The examiner notes that any optical system that includes a prism that may be adjusted will read on the claimed invention. In other words, an optical system including any type of optical element in conjunction with a prism that may be adjusted will inherently teach the claimed invention of “(a) placing at least a first optical element in a first beam path; (b) fixing the first optical element in place without substantially compensating for errors in optical alignment,” (i.e., the optical element other than a prism in the system); “(c) placing at least a first optical alignment element (OAE) in the first beam path,” (i.e., the prism);

“and (d) aligning the first beam path to a first desired beam path by adjusting the first OAE, wherein the alignment of the first beam path substantially compensates for cumulative alignment errors in the first beam path.” (i.e., adjustment of the prism)

Regarding claims 1, 27, 31, 55, 59, 63 and 84, Oono discloses an adjustable prism (Fig. 3, ref. #13, 15). Thus, Oono inherently discloses “a method for aligning a plurality of optical elements in an optical device, comprising the steps of: (a) placing at least a first optical element in a first beam path; (b) fixing the first optical element in place without substantially compensating for errors in optical alignment; (c) placing at least a first optical alignment element (OAE) in the first beam path; and (d) aligning the first beam path to a first desired beam path by adjusting the first OAE, wherein the alignment of the first beam path substantially compensates for cumulative alignment errors in the first beam path.”...

Regarding claims 3, 33, 35, and 61, Oono discloses “wherein the first OAE comprises two coupled, non-parallel, and non-co-planar surfaces, wherein each of the two of the coupled, non-parallel, and non-co-planar surfaces include a reflective element in the first beam path.” (Fig. 3, ref. #15)...

Applicant respectfully disagrees. The present invention, as provided in amended independent claims 1, 31, and 59, provide a method for aligning a plurality of optical elements in an optical device, comprising the steps of: (a) placing at least a first optical element in a first beam path; (b) fixing the first optical element in place without substantially compensating for errors in optical alignment; (c) placing at least a first optical alignment element (OAE) in the first beam path; and (d) aligning the first beam path to a first desired beam path by adjusting the first OAE, wherein the alignment of the first beam path substantially compensates for cumulative alignment errors in the first beam path, wherein the first OAE comprises two coupled, non-parallel, and non-co-planar surfaces, wherein at least one of the coupled, non-parallel, and non-co-planar surfaces include a reflective element in the first beam path.

The method allows the optical elements in a device, other than the OAE, to be placed and fixed in place without substantially compensating for optical alignment errors. The OAE is inserted into the beam path and adjusted. This greatly increases the ease in the manufacturing of optical devices, especially for devices with numerous optical elements, and lowers the cost of manufacturing. Even as the number of optical elements in the device increases, alignment is still

accomplished through the adjustment of the OAE. Because only the OAE needs to be accessed and moved for alignment, the size of the device can be smaller. Also, the tolerances of the placement of optical elements are increased, and the optical elements do not require special features for alignment. (See Specification generally, and specifically at p. 29, lines 5-16.)

The Examiner argues that Oono discloses an adjustable prism in Fig. 3, elements 13 and 15. Applicant respectfully disagrees. Oono discloses that element 13 is an anamorphic prism that refracts an incident laser beam, and element 15 is a fixed mirror. Neither element 13 nor element 15, however, discloses aligning a beam path using an OAE comprising two coupled, non-parallel, and non-co-planar surfaces in the beam path, where at least one of these surfaces include a reflective element in the beam path. The anamorphic prism 13 in Oono is a refractive element, not a reflective one. None of the surfaces of the anamorphic prism 13 which are in the beam path includes a reflective element. In contrast, the OAE in accordance with the present invention comprises at least one surface in the beam path that is a reflective element.

The fixed mirror 15 in Oono, although drawn in the shape of a prism, functions as a mirror. Firstly, the fixed mirror 15 is disclosed as “fixed”, not adjustable. Secondly, the fixed mirror 15 is disclosed as having only one reflective surface in the beam path. In contrast, the present invention recites an OAE comprising two coupled, non-parallel, and non-co-planar surfaces in the beam path, with at least one of the surfaces including a reflective element. Even if the fixed mirror 15 has other surfaces, they are not disclosed as being in the beam path.

Thus, neither the anamorphic prism 13 nor the fixed mirror 15, separately or in combination, can be used to align a plurality of optical elements in an optical device in the manner as claimed. The advantages of using the claimed alignment method, as described above, cannot be realized in Oono. More specifically, Oono does not teach or suggest the aligning step (d), in combination with the other steps, as recited in amended independent claim 1. Similarly, Oono does

not teach or suggest the aligning step (d) as recited in amended independent claim 31, or the attempting step (d) as recited in amended independent claim 59, in combination with the other recited steps.

Request under MPEP 2144.03

Applicant disagrees with the Examiner that any optical system that includes a prism that may be adjusted will read on the claimed invention. A prism may have any combination of properties, including the number of surfaces in a beam path, whether each surface is reflective, refractive, or defractive, and how the prism affects a beam path based on its position in an optical device. The particular combination of properties for a prism is not inherent simply because the prism exists in an optical system. An optical system may comprise prisms, such as argued above in regard to Oono, that yet does not comprise the combination of properties that allows a plurality of optical elements to be aligned as claimed.

Accordingly, Applicant hereby requests under MPEP 2144.03 that the Examiner cite references in support of his position that the combination of properties of the OAE as claimed is taught or suggested.

New Claims 88-90

Applicant submits that new claims 88-90 are allowable for at least the same reasons as set forth above.

Concerning claim 88, Oono further does not teach an OAE where the first beam path input into the OAE is non-co-planar with the first beam path output from the OAE. Oono specifically discloses that “An anamorphic prism 13 refracts the incident oval-shaped laser beam only in a direction parallel to the junction surface of the laser diode 11...”

Concerning claims 89 and 90, Oono further does not teach alignment in a multi-channel device. More specifically, Oono does not teach or suggest a first OAE for alignment in a first beam

path in a multi-channel device, wherein at least one of a plurality of channels traverse the first beam path, as recited in claim 89. Similarly, Oono does not teach or suggest such an alignment in the first beam path in combination with a second OAE for alignment in a second beam path in the multi-channel device, wherein at least another one of the plurality of channels traverse the second beam path, as recited in claim 90.

*Conclusion*

Therefore, for the above identified reasons, the present invention as recited in independent claims 1, 31, and 59, 88, 89, and 90 is neither taught nor suggested by Oono. Applicant further submits that claims 2-30, 32-58, and 60-83 are also allowable because they depend on the above allowable base claims.

In view of the foregoing, Applicant submits that claims 1-83 and 88-90 are patentable over the cited reference. Applicant, therefore, respectfully requests reconsideration and allowance of the claims as now presented.

The prior art made of record and not relied upon has been reviewed and does not appear to be any more relevant than the applied references.

Applicants' attorney believes this application in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted,

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Date

  
Michele Liu  
Sawyer Law Group LLP  
Attorney for Applicant(s)  
Reg. No. 44,875  
(650) 493-4540